A Some people answered the question. Usually they put a 1 or 2 and, if you ask what they mean by that, they'll say bloodshot eyes and misinterpret the question.
Q 1 means never?
A Right.
Q So everybody should answer 1?
A That's the correct answer, and usually 99 percent or 95 percent of the population does that and what we'll do is exclude from the analysis those people who answer 2 or greater and reanalyze the data to see if it changes any of our findings in terms of prevalence of symptoms or health problems of any kind. And it's true so far and we never had a group of people where when we reanalyzed excluding those folks, it changed the outcome.
Q One of the other questions you routinely ask has to do with -- I hope I don't get it wrong -- fingers losing feeling when it's cold?
A Yes.
Q It asked do your fingers become pale, numb or uncomfortable in the cold?
A That's correct.
Q Is it very common in your experience for people to answer yes in that question?
A I don't have any statistics in my mind on it. It's answered yes more often than I suspect, and I find

that -- I don't remember the statistical prevalence of the average score but my recollection is it's one of those questions that's rated 1 to 11.
Q It's a yes or no?
A I just don't recall the prevalence of people answering the question positively.
Q How about answering negatively --
A An overwhelming percentage and I just don't remember. My best recollection is that it is a relatively small number of people who answer the question yes, but I don't recall the exact number.
Q So I'm clear, a relatively small number answers yes?
A That they experience that symptom.
Q I know you live in California. Where I live, that happens to me a lot. Do you have a problem with your fingers getting numb in the cold?
A No.
MR. HOPP: Let's mark this as Exhibit 21.
(Defendants' Exhibit 21 was marked for identification by the court reporter.)
THE WITNESS: By the way, the question comes from the American College of Rheumatology and it's part of the battery of questions to ask about patients who are at risk for developing autoimmune disease and it's not my

question.
BY MR. HOPP:
Q This is 21. This is your report for Kay Hobbs. Do you see that?
A Yes.
Q Is it a complete copy of your report for Kay Hobbs?
A Yes, it seems to be.
Q And this deposition Exhibit 21 contains all of your opinions with respect to Kay Hobbs?
A Yes.
MR. HOPP: This is 22.
(Defendants' Exhibit 22 was marked for identification by the court reporter.)
BY MR. HOPP:
Q Deposition Exhibit 22 is a questionnaire filled out by Walter Hobbs?
A Yes.
Q Who is Walter Hobbs?
A The husband to Kay Hobbs.
Q Mr. Hobbs filled out the questionnaire in late 2004; is that correct?
A October 24, 2004.
Q Kay Hobbs died in 1998; is that right?
A 2000.

Q Sorry. She died in 2000 and diagnosed in '98?
A Yes.
Q So this questionnaire was filled out by her husband four years after she died; correct?
A Yes.
Q And deposition Exhibit 22 forms the basis of your opinions for Kay Hobbs?
A Part of the basis of the opinions, yes.
Q Let's mark this 23.
(Defendants' Exhibit 23 was marked for identification by the court reporter.)
BY MR. HOPP:
Q This is your summary for Darien Griffin?
A Yes.
Q Is it a complete copy of your summary for Derion Griffin?
A Yes.
Q Does deposition Exhibit 23 contain all your opinions with respect to Derion Griffin?
A Yes.
Q A couple of questions about some of the background information.
You state on the first page of Exhibit 23 that at age 3 and several other occasions Derion fell into a ditch that runs from the plant next to the trailer, and

the ditch is loaded with chemicals?
A Yes.
Q Where does that information come from?
A The mother's history that she gave.
Q Jennifer Griffin?
A Yes.
Q And then it says: "Finally, as a result of those accidental heavy exposures to the contaminated water, they prevailed over the company to cover up the ditch so that children would not fall in."
Who is they?
A The neighbors.
Q Do you know that actually happened, that the neighbors went to the company and they covered the ditch?
A I didn't check on that particular point and that's simply what she told me.
Q Do you have specific opinions with respect to how this exposure identified or described in the fourth paragraph on deposition Exhibit 23 affected Derion Griffin?
A Well, it would have been exposed -- we know that the ditch had runoff water from the plant and that the mother would be right in assuming that that ditch would have contained chemicals from the plant and would have constituted a fairly high level of acute exposure

when he fell in the water and got wet with the water and presumably got mud on him, as well, being at the edge of the water or at the bottom of the ditch.
So his exposure would have -- his total exposure would have included those events, which the mother thought were important, because she quite accurately felt that would be a high level exposure.
Q Now, we talked earlier yesterday about Derion Griffin and the fact of his premature birth and the hydrocephalus, causing him to have a lot of continuing health problems.
Do you remember that discussion?
A Yes.
Q Is it your opinion that Derion Griffin had subsequent to his birth additional exposure to the Koppers plant?
A Yes. Living there and we talked about the homes in the Carver Circle area, that he lived in the Carver Circle area, as I recall, and also went to the Tie Plant School, where there is exposure, so he had a lot of exposure from birth up to the present time.
Q To what extent did Derion Griffin's exposures in the Carver Circle neighborhood cause and contribute to his current health problems?
A I don't know how to separate the in utero

exposure from the post-birth exposure. I don't know how to separate it. The totality of his exposure is important. I just don't know how to answer that question.
I do know that premature babies can, even though they have risks for various things, can develop fairly normally. I don't know the statistics on that, but certainly from anecdotes of premature children -- maybe not quite as premature as he, but certainly premature, do have the ability to function in the world at higher levels than he is.
I'm of the opinion that there was additional postnatal injury in this his case, and that problem in a sense continues to the present time because he lives in a contaminated environment.
Q But you're not prepared to say what portion or percentage of his problems are caused by postnatal exposure, as opposed to the circumstances of his birth and prenatal exposure --
A No, I don't know how to proportion those things.
Q We spent a lot of time yesterday and I apologize for not having his document with us -- we spent a lot of time trying to find out how long it took the doctors to intubate Derion, and let's look at page 8 of 9

on your report for Derion Griffin, deposition 23, and it says under Reproduction there, that the baby was intubated 38 minutes after birth.
Do you see that?
A Yes.
Q We established yesterday that he had an APGAR of 1 at the time he was born; right?
A Yes.
Q Is it unusual to wait 38 minutes to intubate a baby with an APGAR of 1?
A They probably used a face mask breathing device before they intubated him and that doesn't tell us that he was without oxygen or without respiration for 38 minutes.
Q Do you know that for a fact?
A No, but the standard procedure -- when you're resuscitating a baby, ordinarily you would use a face mask first on an emergency urgent basis. Absent that, you would do mouth to mouth on the baby, and he was extremely small and it might be very difficult. But what you do with infants is you cover their nose and the mouth and blow into their lung little tiny puffs because they have very small lungs, and you can keep someone going like that and get oxygen into the blood stream.
Then you also do external cardiac compression.

On a 1 pound, 10-ounce baby you will put very small pressure, but you can actually circulate the blood with external cardiac compression and blowing air into the lungs.

I've done it and it's been done many, many times keeping someone going so they're not experiencing anoxic brain injury, while you get everything together to put in an endotracheal tube. In this case they probably had to get an especially small one, and use a special tiny device to get to his extremely small trachea, and I suspect that's why it took a while to intubate, and meanwhile I'm assuming they'd follow standard resuscitation procedures and kept the baby going.

Q I appreciate the description of standard hospital practice, but so we're clear, you're not telling me that that standard of practice was followed in Derion Griffin's case; correct?

A I didn't notice anything in the record that described it one way or the other. I would find it rather unlikely that they'd just let the baby lie there, no breath, no pulse, and do nothing for 38 minutes and just watch. I can't imagine they would do that.

Q That's one of the stories I've heard. If that's true, and Derion Griffin lied there for 38 minutes without intubation, would that have caused part of his

hypoxic brain injury?

A Yes, that's a sufficient length of the time to cause anoxic brain injury.

Q So we're using the same term, you said anoxic?

A Anoxia means no oxygen and hypoxia means low oxygen, and it amounts to the same thing. The point is the cells of the brain require oxygen to function. They don't have the capacity to operate on what's called non-oxygen dependent energy pathways. So that's why the brain is sensitive to oxygen deprivation.

Q And what sort of effects would one expect in a baby who has had an anoxic brain injury like Derion Griffin's? What sort of things would he grow up having to deal with?

A Increased brain function and the brain would not be functioning properly.

Q Again, assuming it happened, would that type of anoxic brain injury explain his current disabilities?

A It would explain some of them, if that happened, yes.

Q Including his hydrocephalus?

A No. That's a birth defect. There is something wrong with the anatomy of the brain. It would be called a birth defect. Not all children, even very premature, have hydrocephalus, and I think that's a separate birth

defect. You see these children and that's considered a birth defect.

Q Is hydrocephalus more common in extremely premature babies not carried to full term?

A I don't know.

Q Do you have any opinions that had Jennifer Griffin been able to carry Derion Griffin to full term, whether he would have that hydrocephalus problem that he has?

A I don't know.

MR. HOPP: Let's mark this deposition Exhibit 24.

(Defendants' 24 was marked for identification by the court reporter.)

BY MR. HOPP:

Q Is deposition Exhibit 24 the questionnaire Jennifer Griffin filled out for her son Derion?

A Yes.

Q Is it a complete copy of that questionnaire?

A Yes, I think so.

Q And I believe it was your testimony yesterday that Derion Griffin is uncommunicative?

A Yes.

Q He didn't speak at all during your examination?

A He smiled when I talked to him and never said

anything to me, and when I asked a specific question, he looked at me like he was full of curiosity.

Q Did you ask Jennifer if he talks to her?

A She said he has slurred speech, that's the way she described it. Apparently he has some speech but when he was in my presence, he didn't speak.

Q Do you know how well developed his speech is, albeit slurred?

A Dr. O'Jile, I think, comments on that, if you want me to get it out. She talks about some verbal aspects of Derion, if I recall correctly so apparently she got some words out of him, and let's see what she said about that.

She talks about the fact that he has a vocabulary so -- his performance on a measure of receptive vocabulary yielded a score on the borderline range, so he understand some words, which means he's able to learn words.

Q Borderline for what?

A Performance on the vocabulary test that she administered.

Q Borderline between normal and abnormal?

A Borderline -- that's between normal and abnormal.

Q Right on the border?

A That's in the receptive vocabulary.
Q And that means?
A Understanding words and knowing what they mean. Measures of language yielded mixed scores with impaired functioning noticed for verbal fluency to a letter and categorical stimulus, as well as confrontational naming.
Q Confrontational naming meaning they put a picture in front of him and he can say what it is?
A Yes.
Q What's mixed results mean?
A With impaired functioning noticed for verbal fluency to letter and category stimulus, as well as confrontational naming. So in those areas he was impaired and others not impaired.
Q Or borderline?
A Right. She doesn't go into detail about his verbal skills.
Q Let's talk about Makia Carver. This is Exhibit 25.
(Defendants' Exhibit 25 was marked for identification by the court reporter.)
BY MR. HOPP:
Q I'm handing you deposition Exhibit 25. Can you tell me what deposition Exhibit 25 is?

A My report on Makia Carver.
Q Is it your complete report on Makia Carver?
A Yes, I believe so.
Q And this deposition Exhibit 25 contains all of your opinions on Makia Carver?
A Yes.
Q You state that Makia Carver is a 7-year-old child, who was born prematurely at a low birth weight. Do you know how premature and what her birth weight was?
A This is a history given by the mother and the medical records did not include her birth, so I don't have her birth weight.
Q The history was given by her grandmother; is that right?
A I have to look at the questionnaire to see.
Q It's in the first paragraph.
A You're right.
Q That's the source of the information?
A Yes.
Q Do you know whether Michelle Topps, the mother, was interviewed at all in this case or gave any history for the daughter Makia?
A I don't have any notation or independent recollection whether the mother came with the grandmother or whether she did not.

Q Again, it says that Diane Topps was not certain how much Makia weighed, but she was in the hospital two weeks because she was small and weak, and that's the extent of the information you have on the prematurity and low birth weight?
A Yes. In the absence of the medical records, that's all we have.
Q Paragraph 2 talks about Michelle Topps?
A Yes.
Q It says that she has behavior problems. Do you see that?
A Yes.
Q Do you know what that means, the behavior problems the mother has?
A No.
Q Do you know how old Michelle Topps was when Makia was born?
A I don't have that information.
Q Do you know if Makia has brothers or sisters?
A I might be able to tell you from the questionnaire data, but I don't see it in my report here.
MR. HOPP: Let's mark the questionnaire as Exhibit 26.
(Defendants' Exhibit 26 was marked for identification by the court reporter.)
BY MR. HOPP:
Q What is Exhibit 26?
A The questionnaire on Makia.
Q Can you tell me based on the questionnaire whether she has brothers and sisters?
A No, I don't have information about siblings.
Q Now, the next paragraph in the summary of deposition Exhibit 25 discusses a bronchial condition. Did you see that?
A Yes.
Q Is it accurate to say that Makia Carver has never been diagnosed with asthma?
A By a doctor, you mean, other than we may have -- let's see what we have on her asthma. She is on Prednisone and was diagnosed by a doctor with bronchitis and it doesn't appear -- at least when the grandmother filled out the form in answering the question "have you been diagnosed with asthma," she filled out "no," but that is probably not correct.
Q Why do you say that?
A Well, because if you look at her medical records, respiratory problems are very predominant here and continue to the present time, and she is on -- according to my records, she is on a medicine called

Prednisone which is given for asthma, and I think it's most likely he is on that medicine for asthma, if you look at the medical records. It looks like the doctors don't actually write the diagnosis in her records that they diagnosed bronchitis, but if they gave her Prednisone, it means that they are treating her for asthma.

Q Have you ever seen a child with bronchitis treated with Prednisone before?

A With asthma?

Q Without asthma.

A No, you wouldn't give it. There is further notation in the medical records that in December '01 she was given Albuterol, a specific medicine for asthma, and not given for any other reason. She was also given a variety of cough medicines and it looks like the doctors are treating her for it but her grandmother just didn't know the diagnosis.

Q Do you know how many times Makia Carver has been prescribed Albuterol?

A I just told you, it was December of '01.

Q Is she still being treated with Albuterol?

A No, she's on the Prednisone, the continuing medicine for her asthma. Not a good idea because chronic Prednisone has a lot of side effects but it probably

works great and suppresses attacks beautifully, but we don't recommend doing it on a chronic basis and Albuterol is not as effective but not as many side effects.

Q Prednisone is a steroid?

A Yes.

Q What's the known side effects?

A All kinds of things. High blood pressure, weight gain, diabetes, peptic ulcers, thin bones, lot of side effects.

Q Why would a doctor treat a patient with Prednisone, as opposed to Albuterol, especially a young patient?

A Don't ask me. I wouldn't recommend it. Further Dr. Wolfson in his history, on page 7 of his report, further notes that the patient was described in June of 2000 with wheezing at Grenada Lake Childrens Clinic; August 27, 2001, she had bilateral wheezing diagnosed in the records he had and was treated with Albuterol.

December 11, 2001 Albuterol and Biaxin were given and she had bilateral wheezing at that time, and Ms. Topps, the grandmother, notes that Makia now wheezes each time she has a cold and has a deep cough pretty much constantly. I don't think there is much doubt that she has asthma.

Q Did you diagnose asthma in Makia Carver?

A I think what I said is she has respiratory problems and that wheezing, productive cough, throat irritation are signs of rhinitis, and I would make the diagnosis and add that to the list of diagnoses, yes.

Q So you're adding to her list of diagnoses that she is asthmatic?

A Yes.

Q And do you see in the records anywhere that any of the doctors indicated she had an attack of asthma?

A I told you from Dr. Wolfson's records and my reading of the records that she was diagnosed with attacks of asthma and treated accordingly.

Q Is there a difference between wheezing and asthma?

A No. Wheezing means asthma for the most part. That's what doctors mean when they describe wheezing, they describe the signs of asthma.

Q I was treated for wheezing as a child and never had asthma. Does wheezing ever occur in the absence of asthma?

A I suppose it could occur. It would be very unusual. You probably did have some obstructive airways, which was reversible and is the definition of asthma. Whether the diagnosis was placed on you or not doesn't

mean you didn't have reversible airway disease, which is asthma.

Q What's the medical definition of wheezing?

A It's a sound you hear when you put the stethoscope on the chest and it's characterized by a high pitched abnormal sound, and it's not a normal breath sound and sort of a squeaky sound and sometimes patients describe it as noisy breathing.

Q That's what it sounded like in my case. What's the medical definition of asthma?

A Reversible airway disease. If you wheeze, there is obstruction of air coming out of the lung. If that is reversible, then it's asthma, and that means it goes away.

Q Now, in response to a question a minute ago, you said don't ask me but I'm asking you.

Is there a specific reason why a doctor would prescribe Prednisone for a child as opposed to Albuterol or some other dilator for their bronchial condition?

A Some patients cannot be controlled in terms of their recurrent attacks of wheezing and cough without using Prednisone, so it's reserved for the severe cases.

I have to assume that the doctor has tried these other medicines and they have not worked and he had to put her on this medicine to keep her from being sick

all the time.
Q I appreciate your assumption. Do you know based on your review of the medical records or any other reason why Makia Carver's doctor prescribed Prednisone?
A There is nothing else in her history or the medical records that suggests that she has some other condition that can be treated with Prednisone.
Q What is Singulair? I know it's a brand name for a medication.
A It's an asthma medicine.
Q What's it contain, Albuterol?
A No. Singulair is another broncho-dilating medicine that works differently than Albuterol and inhibits another part of the inflammatory pathway.
Q Is it a prescription medication?
A Yes.
Q Is it prescribed for people without asthma?
A No. I suppose it could be. Anything is possible but usually it's used for asthma.
Q What is Amoxicillin?
A An antibiotic.
Q Paragraph 3 talks about Singulair and Amoxicillin, which are the bronchodilator and antibiotic prescribed and have improved her breathing condition.
What, if anything, does it indicate to you that

she's been prescribed both Singulair and Amoxicillin?
A That's typical. Singulair helps open up the bronchial tubes with bronchodilatation and Amoxicillin treats the infection.
Patients with asthma have blocked airways and excess mucus and behind that infection develops and you get what they call bronchitis or pneumonia, such as in this case pneumonia was diagnosed. The antibiotic is to treat the infected component of that bronchitis problem.
Q Does it ever happen that it operates in reverse, that is an infection takes hold and bronchitis, wheezing or asthma is the result?
A Infection can sometimes trigger an attack of asthma and almost always does. There are cases in the literature where people develop asthma following certain types of infections that can unmask or trigger the disease in susceptible people.
Q The next sentence has antihistamine. What is that?
A That's given to dry up the secretions, and the doctor is thinking that this would be helpful to help with her cough and mucus production.
Q Antihistamine is usually given to combat an allergic reaction; is that right?
A That's correct.

Q And the antihistamine in Makia's case was helpful. Do you see that?
A That's what the grandmother said.
Q Next it says that the grandmother was advised that she should move out of the area. Do you know who advised her of that?
A The doctor treating Makia.
Q Is that an assumption or do you know that for a fact?
A Well, I think that's right. I have not written down who made the recommendation. That's my recollection but, you're right, I have not clarified that issue, and I don't see Dr. Wolfson's comments on that question.
Q Did you make a recommendation of that type, did you tell Ms. Topps that she should move --
A Definitely. But this is what she told me.
Q Do you have a specific recollection of telling Ms. Topps she should move?
A I don't have a specific recollection. Most of the people I discussed this with. I said, "Why don't you move" to the person, when I asked that question, and they said, "I can't afford to move. I can't sell my house and it has no value and nobody wants to live here, and I don't have enough money to buy another house, unless I can sell my own," and that's the problem. These people

are too poor to move.
Q I understand that as a general proposition but do you know why Ms. Topps hasn't moved?
A That's my assumption here. Admittedly I have not written it down, but that's what I heard over and over again.
Q Ms. Topps also says that Makia had sinusitis. It's in the next paragraph.
A Yes.
Q What is sinusitis?
A It's an infection or inflammation in the sinus and these are air pockets in the face, above and below the eyes. Patients who have chronic respiratory problems, such as Ms. Carver, frequently have upper and lower involvement with what's called reactive upper airways dysfunction syndrome and not only in the lung but in the sinuses and nose, as well, and that's characteristic here.
Q Is sinusitis brought on by bacteria or a virus?
A Sinusitis can be complicated with viral or bacterial infections, and in the case where someone has chronic sinusitis or it's recurrent, the infection is a secondary phenomenon to the very large amount of mucus production and swelling in the tissues.
In response to irritant exposure, such as

occurred here, where she was exposed to irritants from the wood treatment plant, that caused inflammation in her sinuses and behind those inflamed sinuses is an infection as a common complication.

Q You stated earlier when we were talking about your personal history that you had asthma and your parents were advised to move and they moved to Bakersfield.

Do you remember that?

A Yes.

Q If Makia moved out of Grenada, do you think that she would have a similar course?

A I can't predict that she would become completely free of symptoms but I am sure she would be better.

Q The next item, we will look at the last paragraph on page 1, and you mention strep throat.

Do you see that?

A Yes.

Q What causes strep throat?

A That is actually a kind of a generic term these days but, historically, it refers to streptococcal infection of the throat, a certain bacteria.

The reason pediatricians and family practice doctors who deal with children are sensitized to it and

frequently call it strep throat, even when there is no culture to prove the strep is causing the infection or the inflammation, is you want to treat all streptococcal infections of the throat because of the historical problem of secondary complications following streptococcal infections.

Q Which are?

A Glomarulo-nephritis and rheumatic heart disease, both post-streptococcal infection complications.

Q Glomarulo-nephritis is a kidney disease; right?

A That's correct.

Q Turning to the next page, page 2 of 12 in Makia Carver's report, you say that she has headache for no reason.

Do you see that?

A Yes.

Q What does that mean?

A The sentence before says that she has headaches associated with a respiratory infection or sinus infection and so on, which is common. But then the grandmother said that she also has headaches when she does not have an infection, and she was not able to identify a cause.

Q What, if anything, do headaches for no reason indicate to you?

A It's not related to the infection and they're related to other factors, and headaches in 7-year-olds are rare. In adults headaches are common and are associated with tension and emotional upset and depression and all kinds of things that cause headaches in adults, but those things don't usually bother 7-year-olds and usually headaches are not common in that age group.

So I believe her grandmother's observation that there is no reason, I believe, is probably not correct, and I'm sure there is a reason and the most likely reason is the exposures from the plant. As we found in the Columbus, Mississippi group, there was higher prevalence of significant headache problems, as opposed to a control group.

I know that naphthalene and phenol and other organics that are present in the neighborhood next to the wood treatment plant cause headaches, and it's most likely that Makia's headaches are a result of the exposure of the chemicals coming from the plant.

Q Have you ruled out all other potential causes for Makia Carver's headaches?

A I gave you one definite reason, mainly sinusitis, and we ruled out the best it can be, and I told you that it's rare for 7-year-olds to have tension

headaches, which is a common cause of headaches in older people. The same is true for depression and other common causes of headaches. Headache is, you know, very prevalent in adults but not children, and, when you see it like this, it becomes highly significant.

Q I understand you excluded certain causes, but have you ruled out all of the other potential causes?

A I think so. Things like brain tumors and other chronic infectious states and a variety of things cause headaches, none applying to her, and for practical purposes I think we've ruled out the most common causes.

MR. LUNDY: It's noon. Do you want to break for lunch?

MR. HOPP: Sure.

(Lunch Recess.)

BY MR. HOPP:

Q Dr. Dahlgren, we're continuing with Makia Carver and we were talking about headaches and we finished up with headaches when we broke off for the lunch break.

Has Makia Carver ever had a head injury that you're aware of?

A Yes.

Q Can you describe that for me?

A She was hit in the head by a baseball bat when

she was 6.
Q Could that cause recurrent headaches?
A Yes.
Q Let's talk about the next issue, and this is Exhibit 25, on page 2 of 12. She has chronic recurrent ringworm?
A Yes.
Q What is ringworm?
A A fungal infection of the skin.
Q A parasite of some time?
A Yes.
Q What's the standard treatment for ringworm?
A Gosh, I think you used to use Lindaine to treat it. I don't remember. There is probably another agent that also works and I forget the name of it.
Q Is there an effective agent for it, to wipe it out?
A Usually the medicine does cure it.
Q Can you think of any reason why she'd have chronic recurrent ringworm?
A It can be two reasons. One is that her own immune system is such that even though the antibiotic or the antiparasitic agent will suppress it, the body's immune system still has to be normal to cure it and the second possibility is she's being reexposed and you can

get it more than once.
Q And you're not sure which is operative in this case?
A Correct.
Q The next item is that she has caps on all her teeth. What does that mean?
A Well, it means she has very poor teeth and that is something that is described in my report with dioxin exposure.
Q She does have some teeth; is that correct?
A She has some teeth.
Q How many teeth does she have?
A Let's see her report. No, I didn't count the number of teeth she had capped. Let's see what the record suggests. Well, I didn't have the count on her teeth, but they were clearly abnormal and it's quite unusual to put caps on children and it means the teeth really are in poor condition.
Q I'm trying to figure out how many normal teeth she has and how many are missing and how many are capped teeth.
Do you have knowledge of that?
A No, I don't. I noted many capped teeth and I didn't count them. It's not unusual in this part of Mississippi for children to have bad teeth. I don't know

what the prevalence rate is for bad teeth. Clearly there's an issue of -- I imagine anyway -- if they don't get regular dental care or fluoride in the water or toothpaste and don't brush their teeth regularly, they're prone to problems, but clearly I think Makia had more than just the usual bad teeth for a 7-year-old. I think it's probably more than the average, but I don't have prevalence data to answer your question.
Q The next item you mention is she has difficulty in school.
Do you see that?
A Yes.
Q Is there any way you can put a quantification on that for me? Is she behind by a semester or two semesters?
A It says here that she was held back, so she should be in the second grade, but she's not, and she's in the first grade and a year behind now, as we speak.
Q She was held back a year in school, but do we know what level is she functioning at now? Is it six months of grade one or eight months or two months?
A Let's look at Dr. O'Jile's -- by the way, she had a birth weight of 5.12 ounces in her report.
Q Who said that?
A Dr. O'Jile.

Q That's the neurologist?
A Full term but underweight.
Q And Dr. O'Jile is a neuropsychologist?
A She's the director of the neuropsychology lab at the University of Mississippi.
Makia's overall intellectual ability fell in the average range, which is higher than expected in the context of her academic problems. There's a significant 16 point discrepancy between verbal and performance domains. Perceptual, organizational and freedom from distractibility were in the average range, while processing speed index was above average and verbal comprehension was low average.
Her lowest subtest score was a measure of verbal reasoning, social knowledge, comprehension, while her highest score was in the measure of selective attention, symbol search.
In summary, the results of Makia's neuropsychological evaluation suggested generally intact cognitive functioning with the exception of deficits in fine motor speed, naming and verbal fluency to a categorical stimulus. In my opinion, some of the deficits demonstrated by Makia are to a reasonable neuropsychological certainty caused by her exposition to toxins, which is creosote and pentachlorophenol.

So she found her to have some deficits related to the exposure.
Q I don't have Dr. O'Jile's report in front of me but from your summary it sounds like for most parameters she was in the normal range?
A Yes, in many tests she's normal.
Q And for a few she has some deficits; right?
A In certain areas.
Q And Dr. O'Jile believes some of the areas of deficit were caused by exposure; is that right?
A Yes.
Q Dr. O'Jile doesn't say which ones those are, at least not in the report you're holding in your hand?
A She says where the deficits are.
Q But not which ones are due to exposure?
A Not which ones are exposure related, that's correct.
Q So it's possible that Makia was held back because her mother and grandmother thought it might be a good thing, as opposed to something she needs from an intellectual standpoint?
A Well, the teachers agreed with her parents -- grandmother and her mother, so it would be -- the next sentence says that Makia is restless and doesn't pay attention and she's disruptive and not doing well with

her readings and her grandmother has gone over the books with her and notes that Makia doesn't remember words she learned last year.
So there is some very specific issues that led them to make this decision in concert with her teachers, and they're trying to get her to be a better student and that doesn't seem to be arbitrary and seems to be based on what they observed.
Q Based on what Dr. O'Jile said on her report, it's not necessarily exposure-related either; right?
A I don't want to speak for Dr. O'Jile and what she feels is exposure-related and what isn't. She doesn't make that clear in her reports, and I think we need to get more input from her to know what she's thinking.
Q As you sit here today, can you tell me to what extent Makia's problems at school are related to her exposure to the plant and to what extent they're just personality issues she has?
A I would defer to Dr. O'Jile to make that distinction. She is the expert in neuropsychology and her area of expertise is to make those kinds of divisions.
Q Makia was never diagnosed with ADHD, has she?
A Not to my knowledge.

Q She's never been classified as mentally retarded?
A No.
Q And you indicated her mother had behavior problems in your summary?
A That's correct.
Q Do you know which, if any, behavior problems Makia shares with her mother?
A No, I don't.
Q Looking further down page 2 of 12 -- this is your summary for Makia Carver, deposition No. 25 -- it indicates in the self-reported section of migraine headaches. Do you see that?
A Yes.
Q Has she ever been diagnosed as having migraines?
A Not that I saw, and I didn't get a history from her that would be indicative of migraines, and I think she might have just thought that the headaches that the little girl had would be called migraine, but I don't think I would call them migraine based on what she said.
Q What's a migraine or how does it present?
A It is usually a very severe headache that follows a prodrome and they have some warning that something is happening. They have blurred vision or

dizziness or auditory sounds or something happens that is indicative that it's going to be followed by a headache. That's called a prodrome.
The headache is usually on one side of the head or the other associated with light sensitivity or photosensitivity and can't stand to be in a lighted area or sunshine, and they often vomit or are nauseated, at least, and usually have to go lie down in a quiet room until the headache goes away. It's a fairly specific kind of headache that was not described here.
Q Moving on to page 4 of 12, there is an indication she coughs up phlegm or mucus and it says for less than two years.
Do you see that?
A Yes.
Q Now that would indicate that she has been doing this since she was 5?
A If you look at her history, she has been coughing up phlegm since birth, and this answer to the question I don't think is accurate.
Q This is her grandmother's report of her condition?
A Answering these question, yes. And I think you have to be cognizant of the fact that she also lives in this environment where she probably would have trouble

with memory and concentration. So I wouldn't be surprised if she would read the question and not fully understand it or -- if you look at her medical records, it's clear that she's had a productive cough.

Q Would not that assumption that Makia's grandmother might have some memory problems call into question all of her answers on the questionnaire?

A Well, you could, I suppose, say that we can throw out everything the grandmother says, but some of it is corroborated by records and other testimony, and it's taken place in the context that we're seeing Makia in the context of the other plaintiffs.

So although we have to be careful if it's something inconsistent like this with the records, then I'd say that maybe she just made a mistake and not overinterpret that everything she said was wrong.

It's not uncommon for people answering question -- we used to do this in medical school. The first doctor takes a history from the patient and writes everything down. The second doctor comes in writes everything down --

Q Takes the same history?

A Right, the same patient within a few hours. And then this is always the classic thing that would happen. The third doctor that would come in, usually the

attending the next morning, would get a different history but usually one that made the diagnosis.

So it is true in medicine that you have to realize that history-taking is an art and sometimes there is errors made and that's part of the process, but that you look at the whole picture to gain your diagnosis and understanding.

Q So if something is confirmed by a medical record, that's an indication to you that the self report is credible?

A That's a very solid way to make confirmation.

Q And if something is inconsistent with a medical record, that's an indication to you that the self report is not credible; is that right?

A It can be. One of the areas where this is usually the most contentious is the question of cigarette smoking, and you have to be careful to go back and not be overly slavish to either one and try to evaluate the evidence as best you can.

Q Alcohol consumption is another example?

A Yes. People underestimate alcohol ingestion and that's just one of the facts of life.

Q And in self-reporting forms people tend to underestimate weight often -- under-report their weight?

A Actually, that's not much of a problem. It can

be, but most people realize that when they go to the doctor, they're going to get weighed.

Q You'd be amazed how many times I see these forms and the medical records add 20 pounds.

But cigarettes is another thing that people tend to underestimate on self-reporting forms?

A Well, I've not seen data on that question. The reporting tends to be variable, but it is not always that the self report on the questionnaire is under-reporting.

Q And alcohol consumption tends to be under-reported in self reports?

A There is data on that and that we know to be true.

Q We know it's true that it's under-reported?

A Yes. Especially with alcoholics and people with drinking problems.

Q What is Makia's diet like, do you know?

A I don't have information about her diet and I don't have a lot of questions about that or don't usually go into great detail about that in my history nor did I notice others. I think Dr. Sawyer did do some dietary history as his work-up and I can get that out --

Q Let's do that at a break and I want to push through. Your history doesn't include diet?

A No.

Q And your history doesn't include how much sleep Makia gets every night?

A We do ask about sleep but not how many hours per night.

Q For a child 7 years old, if you're not eating right and not sleeping enough, that affects their performance in school, doesn't it

A Yes.

Q And might make them more prone to infections?

A Well, I don't know about that. It's theoretically possible, and I don't see any data that's linked an immune system dysfunction to diet. But theoretically it's true that a healthy diet promotes a healthy body that would have a better immune system, but I've not seen any actual collected data that examined that question.

Q Let's look at page 7 of 12.

A On the insomnia question, she doesn't report trouble falling asleep or staying asleep and waking up frequently. She listed 1, 2 and 1 on the three questions, so it appears that she doesn't have the problem.

Q I have a 6-year-old that doesn't want to go to bed and it's not because of insomnia, she just doesn't want to go to sleep. Kids are like that sometimes;

right?
A That does happen, yes.
Q Look at page 7 of 12. You have on the finding for abdomen, "Possible enlarged breasts for age."
A Yes.
Q What does that mean?
A She's 7 years old and should have no breast development and she's not old enough to enter puberty. This is a sign of an endocrine disruption, and it raises questions since the dioxins are thought to have endocrine disrupting properties, as are the PAHs, and there may be an imbalance in her hormonal development that is causing this early development of breasts.
Q Is she overweight, to your knowledge?
A I have her weight listed --
Q It's not on the self report.
A She doesn't have a weight form.
Q Deposition Exhibit 26, height and weight are marked.
A Dr. Wilson described her as normal, well developed, well nourished, and I also describe her general appearance to be normal. So if she's overweight, it's not such that you call her obese or grossly looking at her.
Q And a girl of 7 years old who is obese might

appear to have breast development that's larger than normal?
A It's possible.
Q Look at her lab values. You took a blood test for Makia?
A Yes, we took a blood sample.
Q And we see a suite of clinical lab tests on page 7, 8 and 9?
A Yes.
Q Is that a standard --
A Yes, standard chemistry, CBC, urinalysis panel.
Q Are any of Makia's values out of the normal ranges?
A The alkaline phosphatase is a little outside the normal range but that's because 7-year-olds have higher values and so that's probably normal. The LDH is 251, slightly high, but related to growth probably and not anything remarkable. The RBC count is borderline low. She's 4.6 million, and the normal is 4.7. Her hemoglobin is slightly low at 13 and her hematocrit is slightly low at 40. The indices are all within the normal range, so she has a borderline anemia, which probably is not clinically significant.
Q What is alkaline phosphatase. What does it do?
A It's an enzyme that appears in the blood and

arises from the liver and bone and in children who are growing bones tend to have higher levels for that reason.
Q Is a high level of alkaline phosphatase dangerous in some way?
A No. It may indicate some dysfunction of either the liver or bone but, as I say, in this case it's compatible with her age.
Q What is LDH?
A Another enzyme in the blood called lactate dehydrogenase.
Q What does it do?
A It's reflective of a function of a number of different organs and almost every organ puts out LDH into the blood steam and when it's elevated it usually means there's some increased turnover in the organ or some tissue damage but, in her case, it's indicative of growth.
Q Let's skip to your discussion or conclusion on Makia. That's 11 and 12. You have a general statement that we see in every single one of your reports that takes up five paragraphs where you talk about neurological, respiratory, autoimmune, dermal and other problems caused by the chemicals at the Koppers plant. I want to skip all that and go to her problems and not the general ones.

A Sure.
Q You indicated she had eye irritation, headache and somnolence; is that right?
A Yes.
Q What is somnolence?
A Excessive sleepiness during the day.
Q Are those problems related to her exposure to whatever comes out of the Koppers plant?
A I believe so.
Q Do you believe she'd have the problems if she didn't live in the Carver Circle neighborhood?
A Well, anything is possible. I think it's less likely if she lived elsewhere that without any exposures that we talked about here that she would have fewer of the problems.
Q Can you say to what extent her eye irritation, and headache and somnolence had been exacerbated by living in the Carver Circle neighborhood?
A I can't put a percentage on it. I think it's a significant factor, but I don't have any -- except for the head trauma she experienced, which clearly would cause a headache, a short-term headache, mostly single blows to the head don't result in chronic headaches, and her current headaches last for years. So I think in her case the ongoing eye irritation, headache and somnolence

and so on are a result.
And I would add at this point, which I didn't put in the report, but I would think it's important, is that her problems with paying attention in school are probably aggravated by or caused by her exposures.
It should be noted, by the way, that her mother Michelle also grew up in this neighborhood and had problems paying attention and being a student and taking care of herself in school, and I think that's what was meant when Michelle's mother told us that Michelle had problems with behavior, that she was really talking about the same sorts of behavioral problems that seemed to be occurring in Makia.
Q You said earlier that you didn't know what sort of behavior problems the mother had. What's your basis for the statement now that Makia and her mother have the same type of behavior problems?
A Over the break I reviewed her deposition --
Q That's the mother?
A Yes.
Q Do you have a summary for that deposition?
A I do.
Q Can I see it.
MR. HOPP: Let's mark this as Exhibit 27.
(Defendants' Exhibit 27 was marked for

identification by the court reporter.)
BY MR. HOPP:
Q Show me where on deposition Exhibit 27 you're reading from when you talk about the behavior problems being similar?
A Well, what you need to do is read through the whole thing, and you can see this young lady Michelle has had a very stormy life, which is mainly talking about her daughter, and you can read between the lines that Michelle has had problems at school. It's not she's retarded or anything like that, but just that she's got behavioral problems, which is what her mother was talking about.
As you look at this, you can see they're very similar. There's no line that says that I behave like Makia, but that's my impression as you read through this.
Q That's your gloss, if you will, on Ms. Topps' testimony?
A She had a very stormy life and is restless, trouble paying attention, problems with discipline, very similar to what's described with her daughter.
Q And you believe those behavioral problems are exposure-related?
A I believe they probably are. We have to talk in terms of looking again at the whole picture. I mean,

obviously, this one patient by herself can be anything, but when you look at the problems that people have in this community with concentration and memory, I think it becomes clear that there is an impact on brain function from these exposures that would be a major contributing factor to brain function which, in turn, results in behavioral problems.
Q Can you tell me to what extent exposure to emissions from the Koppers plant either caused or contributed behavior problems in Makia Carver?
A All I can say is it's been a significant contributing factor.
Q Can you say 50, 60 or 40 percent?
A Well, I can say it's a significant contributing factor based on all the factors, as we discussed.
Q The next item you have on your summary for Makia Carver is pale or numb fingers.
Do you see that?
A Yes.
Q You described that as an immune system symptom?
A That's correct.
Q And how is pale and numb fingers a symptom of some sort of an immune system compromise?
A How do you get that symptom from immune system abnormalities?

Q Yes.
A What the question is searching for is what's called Raynaud's phenomenon, that's an unusual sensitivity in the hands to cold, and when patients report that, as you suggested earlier, it can be within the range of some people's normal.
But when you have that with other questions -- I think what the American College of Rheumatology suggests is if they answer four out of the six questions positively, they're at significantly increased risk for significant autoimmune disease in the future. It's a screening question and by itself should not be overly emphasized, one way or the other.
Q It's Raynaud's syndrome --
A Syndrome is different than phenomenon. Raynaud's phenomenon is simply an accompaniment of an autoimmune disorder, and the mechanism is an alteration in blood flow in the hands and an overactive autonomic nervous system, and the prearterial sphincters are hyper-reactive and in response to cold, they close down the flow of blood into the fingers and hand causing discomfort.
Q But there is a disease called Raynaud's syndrome; correct?
A Yes, if that's the only problem and nothing

else.
Q And that's something subject to a diagnosis and there is a method by which you diagnosis Raynaud's syndrome?
A Yes. There is a laboratory test called tomography where you can actually measure -- you have the patient put their hand in a bucket of water with ice cubes in it, and if they get severe pain and severe decreased blood flow to the fingers, you can make a presumptive diagnosis.
There is a range for this condition and there's some people who have a mild case and they're just careful about getting their hands cold. And there can be severe cases where even a light exposure, like putting their hand in the refrigerator to get food out can trigger a reaction.
Q And there is a difference between this clinical disorder, Raynaud's disease, if you will, and the other condition you mentioned which is Raynaud's phenomenon?
A A phenomenon is a manifestation of lupus and scleraderma and mixed connective tissue disease and all the other autoimmune disorders are frequently accompanied by Raynaud's.
Q Have you made a diagnosis of lupus, scleraderma or any other autoimmune disorder in Makia Carver?

A No.
Q You have not diagnosed Raynaud's syndrome?
A I don't think so. The pale and numb fingers is the only symptoms that she had positive.
Q And your question on the pale or numb fingers is a yes, no?
A Right.
Q There is no degrees --
A As I said, the American College has their yes-no protocol, and that's what we're following.
Q Has exposure from emissions from the Koppers plant caused or contributed to Makia's immune system symptoms?
A I think it probably has. I mean since she only has one symptom in that group, I don't think it's enough to say there's any clinical significance to that condition but, you know, we list it as an outcome in this particular population because it's an outcome we've seen in other cases, and we're listing it for completeness sake.
I'm not saying she has lupus or any other diagnosable autoimmune disorder, but she does have a Raynaud's phenomenon complain. It may or may not be significant. As I said, the American College makes recommendations for asking these questions to identify

high-risk people. Her response to one question is not really enough to say that she is at high risk for autoimmune disease in the future, but looking at the population as a whole, a lot of these people have more symptoms compatible with immune system dysfunction.
Q Can you tell me to what extent the emissions from the Koppers plant caused or contributed to that condition?
A No. I have not identified any other factors in her risk panel, if you will. No other reason why she would have these symptoms besides that one, but I can't say that it's a serious enough problem to reach a diagnosis, and we need more data to make it into something that was rateable as an injury.
Q Let's move to the respiratory symptoms and you have wheezing, productive cough, throat irritation, sinusitis and rhinitis.
Rhinitis is a runny nose?
A Yes.
Q And you've added asthma?
A Wheezing and productive cough and all the other factors we talked about that are present in this case, medical records and so on, all strongly point towards the diagnosis.
Q My question -- and I thought you answered --

as a medical doctor, have you diagnosed Makia Carver with asthma?
A I said to you this morning that I thought she had asthma and that's a correct diagnosis.
Q And have the emissions from the Koppers plant caused or contributed to Makia Carver's respiratory symptoms, including asthma?
A Yes.
Q To what extent have the emissions from the Koppers plant caused or contributed to Makia's respiratory problems, including asthma?
A The only other risk factor is that family members have smoked in her presence. The grandmother says she goes outside to smoke but others smoke in her presence, so she's had secondhand smoke exposure probably dating back to when in utero, which I believe contributes. A lot of people have secondhand smoke and not all develop these problems, especially to this degree.
This girl has very significant respiratory problems and they're quite severe and require ongoing treatment, including Prednisone, as we said earlier, is a powerful medicine and that means she has rather severe asthma. So there is a contribution from secondhand smoke but it's significantly less of a causative factor than

her exposure to the chemicals from Koppers.
Q Can you quantify to what extent have emissions from Koppers caused or contributed to her asthma and to what extent has secondhand smoke or other factors caused or contributed to her asthma?
A As I said, I think it's the predominant cause.
Q Other than the predominant cause, can you give me any other specificity as to how much contribution is from the Koppers plant?
A No, other than to say obviously a major or the major factor.
Q Next is dermal symptoms, skin redness and dryness and itching.
A Yes.
Q Do they have clinical significance in this case?
A Yes. As we testified before, the presence of skin rash, skin itching and skin irritation is something we saw in our study of the Columbus, Mississippi cases and that we see in creosote exposed treatment workers and one of the predominant problems we're seeing here. It's a problem shared by almost everyone living in the neighborhood.
Q This is self-reported by her grandmother?
A Yes.

Q To what extent have emissions from the Koppers plant caused or contributed to Makia Carver's dermal symptoms?
A I think it's the only identifiable cause and there may be others but I'm not aware.
Q Are you prepared to say that but for living near the Koppers plant, Makia Carver would not have skin redness, dryness and itchiness?
A I think that's a reasonable statement, yes.
Q The next plaintiff is Nykyia George.
Doctor, I've handed you what's marked deposition Exhibit 28 and 29, and these are the summary and the questionnaire for Nykyia George.
Do you see those?
A Yes.
(Defendants' Exhibit 28 and 29 were marked for identification by the court reporter.)
BY MR. HOPP:
Q Is Exhibit 28 your report for Nykyia George?
A Yes.
Q Is it a complete report for Nykyia George?
A Yes.
Q As you sit here now, do you have any opinions related to Nykyia George that are not set forth in your report deposition Exhibit 28?

A I think this is all the information I have on her at this time.
Q Nykyia is two years old or was when you saw her?
A Yes.
Q You identify in the second paragraph severe asthma.
Do you see that?
A Yes.
Q Has she been diagnosed by a doctor as being asthmatic?
A I'm sure she has but let me see if I have any records on her. She was diagnosed by Dr. Simmons as having asthma when 6 weeks of age and lived in Alice Hill's house.
Q Is Alice Hill the grandmother?
A Yes.
Q And Alice Hill is the one who filled out the questionnaire for Nykyia?
A Yes.
Q And the questionnaire is Exhibit 29?
A Yes.
Q Who is Nykyia's mother?
A I can't immediately find the answer. I'm sure it's in the record.

Q She lives with her grandmother?
A Yes.
Q And the grandmother is the one who gave you the information?
A Yes. House dust levels in Alice Hill's house are the highest, I think, that we have in the whole bunch of people. It's really, really high.
Q What's Alice Hill's address?
A 183 Carver Circle.
Q That house was one of the highest numbers taken?
A Astronomically high.
Q The house dust sampled was attic dust?
A I'd have to defer to the record. I think it was attic dust. Mr. Horsak's people took samples and, if attics were available, they used attic dust because it's a good repository source.
Q But the questions on sampling technique and samples that Mr. Horsak obtained, those are better asked of Mr. Horsak?
A Yes.
Q Now, looking back at deposition 28, you have a narrative that is just before the self-reported medical history here, and you say that Nykyia's mother states that the child's father possibly has asthma. She doesn't

know and he works in the golf course and lives with his mother and child.
That's unclear but it sounds like the father doesn't live with Nykyia?
A That's correct. Nykyia lives with the grandmother, as we established.
Q Who is the mother's mother?
A We think, yes.
Q And so I'm wondering what, if any, additional information you can provide on the father's asthma history?
A This is it. They said, well, we think she might have asthma but we're not sure.
MR. HOPP: Is it Alice Hill's father's mother or mother's mother?
MR. LUNDY: I think it's the father's mother. Nicholas Hill is the father and Alice is the mother.
BY MR. HOPP:
Q Does that help you, doctor? Does that clarify that Nykyia lives with her maternal grandmother and father?
A Paternal.
Q Paternal grandmother and father?
A That is murky here as we go through it.
Q And we don't know whether the father has asthma

or not?
A If he does, the mother doesn't seem to know about it enough to say yes or no, and it might have been something that was historical and not terribly clear and certainly not asthma like this child has.
Q Other than the asthma, it looks like Nykyia's – sinusitis, runny nose and colds -- it looks like Nykyia's history is negative; is that right?
A No. She has problems which I didn't put in this report but that I'd add now and that is very bad teeth.
Q Let's talk about that.
A All the teeth were rotten and all were pulled out and also has a thyroid problem, which needed to be added to my report.
Q So is there a word for someone with no teeth?
A Edentulous
Q Is Nykyia edentulous?
A It says here all of her teeth were extracted in 2004 by Dr. Nina Eva, a dentist in Grenada, because according to Mrs. Hill her teeth all became rotten so that would be something that happened to the child, since I saw her, I think. At any rate, it should be added to my history?
Q Do you remember, as you sit here now, if she

was edentulous when you saw her?
A No, I don't.
Q She was examined more recently in the last month, six weeks, in Jackson, and I didn't see her and my understanding from the doctor is she does have a partial set of teeth.
Is that inconsistent with your recollection or understanding?
A It's inconsistent with the history -- I'm reading about the teeth from Dr. Wolfson, and that is the history he got from Mrs. Hill.
Q In any event, it's your understanding based on what you've read that she has dental problems of some kind?
A That's right.
Q The extent to which she has dental problems is not clear at this moment?
A Except to say it is significant. If there is some residual teeth, then there may be. Looking at Dr. Wolfson's examine, he says that upper and lower teeth are missing. He doesn't say if any are left.
Q He doesn't say if they're all missing or not?
A That's correct.
Q Again, to go back to the line of questions. She has dental problems and we're not sure to what

extent?
A Yes.
Q So there is the teeth and then the thyroid. Tell me about that.
A Again, this is something that was communicated to Dr. Wolfson in his history. He was diagnosed at Jackson Medical Center, but no medication and followup was provided. So that's an open question.
Q What thyroid problem was diagnosed at Jackson --
A Just a thyroid problem.
Q What types of thyroid problems are there?
A Many different types and there's no point in going through all the possible conditions and it's something that needs to be investigated.
Q There needs to be a more complete diagnosis of her thyroid?
A Right. We wouldn't want to make any statement at this point, and the reason it's important is that the dioxins and PAHs have been found to disrupt the thyroid metabolism.
Q In humans or animals?
A Both. And it would be something worth pursuing to some degree and we've not focused on thyroid issues in this case or the earlier case in Columbus, but it's

something that should be investigated in view of the abnormalities demonstrated in some of the studies reported.

Q As we go through the deposition, we'll talk about your report and the literature you rely on and you break out your literature references by health effects and conditions?

A We try to do it that way.

Q And that's helpful. But do you remember in your report whether you deal with behavioral issues, as a separate health condition?

A I think what we talked about was the neurologic effects, developmental effects. In terms of behavior, we've not focused on that, and I don't recall if I did a section on behavioral effects on either of these compounds.

Q Did you do a separate section on thyroid issues?

A No.

Q Is thyroid covered by any of the other body systems that you addressed?

A No. Some of the references, for example, the ATSDR toxicological profile on these various chemicals do have sections on both behavioral effects and on the thyroid effects. So those are included in the

bibliographies we referred to, and I don't know if we included in the scanned documents the toxicological profiles but we referred to them as part of the database.

Q Toxicological profiles you can get on the website. Those are review papers, aren't they?

A They compile the literature and then pick out what they think is most relevant, and it's like a review article, if you will.

Q And while ATSDR does do original investigations, their tox profiles don't contain original science; is that correct?

A They don't usually report on original data. What ATSDR will do is publish their findings in peer review literature and then refer to it in the profile.

Q When the ATSDR goes to do an investigation of a community or a sub-population, they do a report and usually you see that, won't you?

A As I said, they will publish it in the peer review literature and occasionally will publish something that is just a report of a investigation that they have carried out.

Q Let's go back to Nykyia. One of the other immune system issues you raised is allergies.

Do you see that?

A Yes.

Q Does she have allergies?

A I think she reported some.

Q Have her allergies been caused or contributed to by emissions from the Koppers plant?

A I think, as I said before, I believe that is an issue, an aggravation. In her case I don't know if I'd raise it to the level of one of her major injuries. Her allergies I don't -- I'm looking to see if her grandmother listed the things to which she is allergic --

Q In your summary it says allergies but doesn't say what.

A What the grandmother wrote is "We aren't sure what she's allergic to. She's being worked up by the doctors for her specific allergies."

And that's still unclear but the fact is that the doctors feel she has some allergy problems and not sure what.

Q Does creosote, pentachlorophenol or dioxins cause allergies?

A Not per se but certainly aggravate and cause to become clinically relevant and clinically expressed.

Q To what extent has creosote, penta or dioxin contributed to Nykyia allergies?

A I don't know the answer. We included it because the grandmother listed it as a finding, but I'm

not sure based on the available data that there is a significant injury related to allergies or not.

Q Next you list Nykyia's respiratory problems, including asthma and what could probably be described as other issues relating to asthma, shortness of breath, et cetera?

A That's correct.

Q Have emissions from the Koppers plant caused or contributed to Nykyia George's respiratory problems including asthma?

A Yes.

Q To what extent have emissions from the Koppers plant caused or contributed to Nykyia George's respiratory problems, including asthma?

A I think it's the predominant cause, and I didn't identify any other factors that might be present. There is the possibility, given the question of the father having asthma, that there is a genetic predisposition in her case but clearly there has been a very severe aggravation and if not entire causation from the exposures.

Again, it has to take into account the whole context of what we've seen in this case, a very high prevalence of respiratory irritation and exposure to agents which are going to damage and inflame the

respiratory tract, both upper and lower, and many folks in this neighborhood, if not practically all of them, have one degree or another of respiratory tract problems and, in her case, even if a genetic predisposition, she's much, much worse than she would be otherwise.

Q Other than to tell me it's the predominant cause, can you give me any other degree of specificity as to how much the emissions from the Koppers plant caused or contributed to her asthma?

A No.

Q Teeth. Have the emissions from the Koppers plant caused or contributed to the dental problems that Nykyia George has?

A I think so. We mentioned with the other child, Makia, that she had teeth problem, and this child seems to have more severe problems, and, as I stated in my report, have been reported with exposures to dioxin.

Q Can you tell me to what extent exposure to emissions from the Koppers plant have caused or contributed to Nykyia George's dental problem?

A I can't identify any other source. It's somewhat unusual in my experience to have 2-year-olds have their teeth pulled out because they have became rotten, and because of the astronomically high levels of dioxins in her home and the known association between the

dioxin and teeth problems, I think that's the cause.

Q The sole cause?

A As far as I can tell. I can't see anything else.

Q But for living near the Koppers plant, Nykyia George would not have problems with her teeth?

A That's my understanding.

Q Thyroid problems. Are you prepared to say that Nykyia George's thyroid problems, whatever they are, are related to emissions from the Koppers plant?

A I can't say that at this point and it should be investigated further.

Q Doctor, you have in front of you 30 and 31. Do you see that?

A Yes.

(Defendants' Exhibit 30 and 31 was marked for identification by the court reporter.)

BY MR. HOPP:

Q This is a report on Jarvis McNeal and a questionnaire filled out by Talicia McNeal?

A Yes.

Q And the report is deposition 30. Is this your report on Jarvis McNeal?

A Yes.

Q Does it contain all your opinions regarding

Jarvis McNeal?

A Yes. Well, let me --

Q Are you looking at Dr. Wolfson's report?

A I am. There was something in my mind that I wanted to figure out here. He has also, in addition to what I indicated, hypoosmia.

Q Spell that.

A H-y-p-o-o-s-m-i-a -- a decreased sense of smell.

Q Anything else that you want to add?

A I don't think so. I think that's all.

Q You state in your report that he's an 11-year-old boy who has lived by the plant since he was born. Do you see that?

A Yes.

Q And it does say that he can detect a strong order in the air where he lives?

A Yes.

Q You assume that's an odor from the plant?

A Yes.

Q Did he say it was an odor from the plant?

A Yes.

Q He's currently in the 5th grade?

A Yes.

Q Doing well in school, active in sports?

A Yes.

Q Are his grades good?

A When he said he did well in school, I didn't pursue his grade levels. Let me see what Dr. O'Jile said about him. I think there were some problems there. Well, she found an abnormality that she couldn't explain.

Q What type of abnormality?

A What we call a copy and recall of a complex figure. She felt his performance on that was very abnormal and the other tests were normal, but she was puzzled by that.

Q And what is a copy and recall of a complex figure?

A One of the tests that she gives -- I'm not sure if it's the Rey test -- let's see the tests she gave for that. It's the Rey complex figure and his ability to copy that was in an extremely low range.

Q Do they show him a picture and ask him to draw it?

A He looks at the picture and studies it for a few minutes and then asked to draw it and he totally flunked that one.

Q How many times did she administer that particular test?

A I don't know. I think it's once. See, they

have to copy it first looking at it and draw it, and then they take away the picture and ask them to draw it right away, and then they wait a half hour, 20 minutes or something like that, and have him draw it again. So he just flunked that test. He did well on the others so it's not a motivational issue and it's an abnormality in function.

Q Which portion of it did he flunk, all three sections or one or two?

A He flunked the copy section. He got better on the immediate one and then completely flunked the delayed one. He had a very low score.

Q So you don't believe this is an indication that he lost interest in the exercise?

A No because he did well in the others and was either average or above average in many of the tests. He had low average on some, but he was more or less average, except he was way out on that one.

Dr. O'Jile noticed that and didn't quite understand it. So, anyway, I think the summary is he doesn't have a measurable deficit, according to her assessment, except for the one complex figure he could not copy.

Q Does the failure on the one portion of the neuropsychological test battery have clinical

significance to you?

A Well, yes. I think so. In view of the context of the whole data-set here.

Q What do you mean?

A He had trouble doing some of the tests that we had him do, as well, and he complains of irritability. He complains of headache -- I think in view of the context of where he lives, it is true that the exposures probably had affected his neurological system, although not nearly as much as other people.

Q You think he had some sort of neurological injuries as a result of exposure from emissions of the Koppers plant?

A Yes, I believe so. He's not totally normal -- I want to see his -- this is Dr. Sawyer's summary of dioxin exposures, and Jarvis McNeal is among the higher ones, as you can see here, and I think that's significant.

Let me just look at Dr. Sawyer's report. He describes in great detail his exposure to the dirt and to the mud and ditches and playing outside his home in the contaminated area on Carver Circle where he was raised most of his time.

He attended day care at Popular Street, which was far away, but he lived with his grandmother Patricia

McNeal at 275 Carver, until he started school. During his early years he was very much exposed on Carver Circle and they played outside a great deal and the dose, as I pointed out, to dioxins was calculated to be quite high, as well as his PAH and -- the PAH dose was also quite high, especially to the coal tar pitch follicles. So I think taking everything into account, there has been an effect on his functioning due to the exposures that we've discussed.

Q Taking everything into account, including Dr. Sawyer's dose reconstruction, do you believe he has had a neuropsychological injury as a result of the exposure to the Koppers plant?

A Yes. Not as severe as the others but there's an effect here.

Q Is there anything else you want to add to your report in terms of diagnoses or effects?

A No.

Q Your report says he's active in sports?

A That's what he said.

Q Do you know what sports he plays?

A No, I didn't collect that information.

Q Do you know if he has difficulty with sports due to his respiratory complaints?

A No. Apparently he's able to overcome it with

the aid of medication.

Q He didn't tell you that he can't play football or baseball because he can't breathe?

A No, he didn't say that.

Q You say he had asthma since an infant. Was that asthma diagnosed by a doctor?

A Yes.

Q Who? Which doctor?

A Which doctor, that's a good question. Maybe it was a witch doctor. Grenada Childrens Clinic. I don't have a doctor's name.

Q You're looking at your summary?

A Yes.

Q What page?

A 10 of 12. It basically says URI in March '99 bronchitis, but the history, which is similar to mine, from Dr. Wolfson was that the stepfather stated he was definitely diagnosed with asthma at one year of age and not it's indicating who the doctor was.

Q URI means what?

A Upper respiratory infection.

Q And bronchitis is?

A Lower respiratory tract infection.

Q Is Jarvis on any medication for asthma?

A No. He wasn't at the time I saw him, anyway.

Q Now, you indicated in your history here that two months ago he was taken to the emergency room due to excessive vomiting?
A Yes.
Q Do you know what the cause of that problem was?
A Dr. O'Jile mentioned it. Let me see if I can -- it doesn't really say in her review of the record what caused the vomiting.
Q For purposes of your expert opinion in this case, does the incident of excessive vomiting have any clinical significance?
A No.
Q You say that he has a rash on his face and arms, for which he is not treated. Did you see those rashes?
A No, I didn't notice the rash when I saw him.
Q Did he describe them for you --
A No, he didn't describe them for me.
Q Then it says headaches on a regular basis. Do you know how often he has headaches?
A Dr. Wolfson says two or three times a week requiring Tylenol and at times he has to lie down for a couple of hours.
Q Does that description indicate to you that Jarvis may have migraines?

A No. It doesn't describe migraine here. And it also says in Dr. Wolfson's report that he regularly suffered from irritated watery eyes and gagged on the odor and developed headaches from the odor.
Q We're talking about your visit with Jarvis. Do you remember meeting him?
A I don't have an independent recollection.
Q We talked earlier and you said something about that he's doing well in school or was active in sports?
A Yes.
Q Is that a present recollection or based on what you wrote down?
A Based on what's written down.
Q And his mother gave you the history?
A She filled out the form. He gave a history, as well. They both responded to questions. He was able to do that.
Q So Jarvis and his mother both gave the history; is that right?
A I think that's correct, yes.
Q And what makes you say that? What have you looked at to refresh your recollection or what assumptions are you making?
A He was responsive and I think that's the case, he was able to speak and he did offer opinions.

Q Let's look at some of Jarvis' self-reported symptoms. First of all, it does indicate that his fingers become numb or pale in the cold?
A Yes.
Q And his skin does break out, but that's a yes or no question; is that right?
A That's correct.
Q On the list of symptoms, we see on page 4 of 12, this is where you ask the patients to range their problems 1 to 11 -- 1 never and 11 always. For headache he has 11?
A Yes.
Q Is it plausible he has a headache all the time?
A Some people feel that way and they're so bothered by it that they put down 11. I think the mother filled out the questionnaire and felt her son was having a headache pretty much all the time.
But, as I indicated, Dr. Wolfson obtained the information that it was two to three times a week, which is pretty often for an 11-year-old kid, as we discussed before, and it's not a common thing for 11-year-old boys to have headaches. So even though she said always, I think it's more of a frustration on her part.
Q On his physical examination, page 5 of 12, you indicate his blood pressure, pulse, height and weight.

Do you see that?
A Yes.
Q Those are normal values for an 11-year-old boy?
A Yes.
Q On page 6 you set out the results of some of the neuro -- how would you characterize these? Neuropsychological or neurological?
A I call them neurophysiological tests and actual measurements of performance where it's not a question of interpretation but a question of simply timing or measurement and several of them were conducted by computerized protocol. So it gives us a screening battery, if you will, of neurological function.
Q You administered this neurophysiological test battery to Jarvis?
A Yes.
Q And you administered it to several other plaintiffs; right?
A Yes.
Q But not all of them; is that correct?
A That's correct. Some of them either were too young or some of them were, you know, not able to do it for one reason or another.
Q That's my question. What would have prompted you to not give the neurophysiological test battery to

one of the plaintiffs?
A Usually it would be age. Younger children don't test. And the other area that is important is their willingness to do it. Some people are in wheelchairs and can't do a lot of the tests and we try to get everybody to do it who is old enough.
Q Do you believe in this case that everyone old enough and willing took this neurophysiological test?
A Most did, not all.
Q We touched on this earlier, but which if any of Jarvis' neurophysiological tests were outside the normal range?
A I think he had a real hard time with trails A and B.
Q What is trail A and B and what is that test like and what it predicts?
A Well, attached to the questionnaire is trails A and B.
Q He has to connect the dots?
A Yes. He did it and he was slow. Trail B, you have to go from number to letter, he just got totally confused, which to my way of thinking is indicative that he was not really able to function well on that test.
Q This is --
A It's sort of like that Rey figure test. He did

well on most of the tests and bombed on this one.
Q Just so I understand, you give the kid a pencil and a stopwatch and say go and --
A First he has to practice on the page where he -- this is the practice page and you instruct him --
Q The sample page --
A He learns what he is to do and gets the hang of it, and then you would say go ahead and finish and start over with the new page, going from 1 to A to 2 to B and you time that one, and he bombed out on that and couldn't do it in the allotted time.
Q Is there a way to control for malingering in the trails A and B test?
A Yes.
Q How?
A By looking at performance on other tests and he, for example, on reaction time did well. If he was trying to malinger consciously, he would have screwed that up because malingering is obvious on the test because it's a millisecond test and people can't really slow down their reaction time consistently in a way that would not be obvious. And he was normal on the reaction time, anyway.
He's got a problem with certain parts of his brain that has to do with constructing images in his mind

and putting pencil on paper like with the Rey test and there's a disconnect in that area.
He was reasonably normal on all the other tests and so, just like with Dr. O'Jile, he obviously was trying and there is no question of malingering here. He just had a deficit in one area.
Q Your trail marking tests in Dr. O'Jile's --
A Rey figure test.
Q Rey figure test, look at a similar brain function?
A That's my understanding, yes.
Q And he had consistent poor results on all those tests?
A That's right.
Q What's the culture fair test?
A It's a so-called education level, free test of general intelligence, and you don't have to be educated or finished in school and it tests how well your brain functions, and it's a brief and relatively straightforward I.Q. test, if you will.
Q Did he test within the normal range in culture fair test?
A Yes.
Q You took a blood and urine sample from Jarvis?
A Yes.

Q And again submitted those to a lab for analysis?
A Correct.
Q And were his results within expected ranges?
A Pretty much. Let me glance over them. As with the other child, the alka-phos was high and the LDH for the same reasons as we noticed in the other folks.
Q That's an indication that he's growing?
A Yes. And he also had reduced red blood cell count, hemoglobin and hematocrit, slightly low, borderline values, and more below than the values of the other child we looked at. His hemoglobin is 11.6 and hematocrit is 38 and low MCH and borderline low MCV and MCHC.
Q Are those values of clinical significance to you?
A They suggest iron deficiency and a slight anemia due to iron deficiency.
Q Do you think that's possibly due to diet?
A Could be due to diet, yes. Sodium looked to be at the high end.
Q Is 143 high for an 11-year-old?
A No, normal.
Q Let's skip to your conclusions. You indicated at some length that Jarvis has a specific kind of

neurologic deficit; is that correct?
A Yes.
Q Was that neurologic deficit caused by or contributed by exposure from the Koppers plant?
A I believe so, yes.
Q But for living in the Carver Circle area, would Jarvis McNeal have the neurological deficits we discussed?
A I don't think so. I think there is no other identifiable problem that I can see that would have led to this problem, other than his exposure at the plant.
Q So it's your opinion to a reasonable degree of certainty that the sole cause of neurologic deficit is the emissions of the Koppers plant?
A I don't see any other factors that would contribute.
Q You indicated immune system symptoms, pale and numb fingers, rash on cheeks more than a month and a rash other than sunburn.
Do they have a clinical significance to you for the purpose of this case?
A He has three now of the symptoms that are thought to be predictive of autoimmune dysfunction and, as I stated with the others, it's a question of increased risk and it reflects that he has a diagnosable disease at

this point.
I think, as with the others, it's an abnormality we noted in this population, and I'm not saying today but it reached the point where he has an injury that interferes with his life but requires treatment, unlike the respiratory and the neurologic problems I just noted as part of what we've seen in this population and its abnormality and needs to be -- I believe it's related to the exposure but is not reaching the level of constituting injury at this time.
Q Can you tell me, but for living in the Carver Circle, Jarvis McNeal would have these immune system symptoms that he has?
A I don't think that I can answer that question since it has not reached a point where it's a diagnosable injury. So he's got some symptoms and may or may not be significant for a diagnosable disease or a disease with impairment, so I can't say that there is a causation factor for which there isn't a measurable injury.
Q Now, his primary respiratory symptom is asthma; is that right?
A That's correct.
Q And that's a disease?
A Yes. That's a condition which limits his activities and constitutes a need for treatment and for

which there is an injurious exposure from the exposure from the Koppers plant.
Q Do you believe that Jarvis' asthma was caused by or contributed to by emissions from the Koppers plant?
A Yes.
Q Can you tell me to what extent Jarvis McNeal's asthma was caused by or contributed to by emissions from the Koppers plant?
A I think it's a predominant factor. His mother and stepfather smoked, and he states in his history to Dr. Wolfson that he would always step outside to smoke and they didn't smoke in the house, except in their own bedroom.
In addition to that, the mother worked at Heat Craft, which I am not sure whether that contributes or not, but I think the smoking at home by the parents would contribute to his risk of respiratory problems, and I can't give you a percentage of causation from the environment of the Koppers facility. But, as with the other cases, it's the most important factor for all the reasons we talked about.
The dose in this case is quite high to exposures and to the respiratory and to the dioxins. And I think in terms of what he's likely -- from the history we do have, is the contribution of secondhand smoke.

Although it contributes, I think as compared to the Koppers emissions it's a minor factor.
As I stated earlier, many people are exposed to secondhand smoke and develop no measurable problems, even though there is a higher prevalence of childhood bronchitis and respiratory problems in children who live in a home with secondhand smoke, it is not a hundred percent. There are many children who live in the home without developing respiratory problems and it's just a higher prevalence.
So even though it can contribute and it may well contribute here because of the combination of factors -- the irritants of cigarette smoke and the PAHs in cigarette smoke added to the burden that he was experiencing from the environmental exposures.
The difference being that with the environmental exposures, every breath he takes -- for example, when he said he can smell odors from the plant, every breath is bringing chemicals into his body. As Dr. Sawyer pointed out in his reports, the environment there was in excess of what is considered acceptable levels for Mr. Jarvis and the others, and every breath they took contained these coal tar pitch follicles and naphthalene and other constituents of the creosote vapor, which includes phenol and a host of all other chemicals, not

all of which have been modeled.
But every breath he takes while awake, asleep during the time he lives there contain these contaminants. Cigarette smokers will blow some smoke and he'll inhale it, but it doesn't come in with every breath he takes. Smoking is an intermittent activity and cigarette smoke blows away and it's back to regular air.
So in the volumes of exposure that have been described by Dr. Sharma and Dr. Sawyer show major impact on this young man, as well as other people we've been talking about, which is a more important factor, I believe, than secondhand smoke, who make a conscientious effort to not smoke in his presence, by the way.
Q Do you know what the odor threshold is for naphthalene?
A I don't know.
Q Do you know what it is for creosote as a mixture?
A I don't recall the exact levels offered for those materials.
Q Do you know whether there is creosote or naphthalene in the air every moment where Jarvis lived or lives?
A There probably is. At times it's not strong enough to smell, I'm sure, based on what I've been told,

and other times it's very strong and you can smell it and Jarvis McNeal said it made him sick at times. So there is a -- it goes up and down and I doubt if it ever goes to completely zero in that environment because there is continued off gas in the ditches and soil and the treated lumber and so on and so forth.
Q We talked at length today and yesterday about dose?
A Yes.
Q You indicated every breath that Jarvis takes he has some level of exposure to these contaminants?
A Yes.
Q Are you prepared that every breath Jarvis McNeal takes has some sort of clinically significant dose?
A No, I wouldn't say that. A low dose inhaled over a long period of time can have an adverse effect.
Q Assuming it builds up in the system?
A Not even assuming that. It injures the cell and then goes away, and it leaves its footprint and that's how we learn, for example, that something like benzene inhaled even way below the odor threshold is highly hazardous and not because benzene is a cumulative toxin but it goes in and damages the cell and leaves.
Q Are you talking about substances that are

genotoxic; is that right?
A That's correct. Benzene is genotoxic.
Q Is creosote?
A Some of the constituents are.
Q Are PAHs genotoxic?
A Yes. There's the carcogenic PAHs which are definitely genotoxic and naphthalene has been recently found to be, by the State of California, probably a human carcinogen.
Q As is Chardonney in California. Isn't there a prop 65 warning on the wine bottles?
A About naphthalene?
Q No. California has a prop 65 -- different regulatory -- let's skip ahead.
Is it your testimony that naphthalene is genotoxic?
A I don't think the studies have been done as to the mechanism it causes an increased rate of cancer in animals that have been tested.
Q It causes an increased risk of nasal cancer in rats; right?
A Increased cancer. I think nasal cancer and I'd have to double-check.
Q Are rats obligate nose-breathers?
A Yes.

Q And what doses have been studied in rats?
A I don't recall from memory.
Q Are dioxins genotoxic?
A No. Their carcinogenic capacity is mediated through other mechanisms.
Q Is pentachlorophenol genotoxic?
A I believe it is.
Q And what component of the penta mixture is genotoxic?
A The penta itself is, I believe, genotoxic, as I recall.
Q Do people sometimes contract diseases from unknown causes?
A Yes. That doesn't mean they were not caused by something but don't often -- in a large majority of situations, we don't know the cause.
Q Is the same true for birth defects and they have unknown origins?
A Unidentified is a more accurate way of putting it. There is a cause but we don't always identify it. We call those unknowns.
Q You have done studies of a similar type, similar to the Grenada work you've done at other sites throughout the country?
A Yes.

Q And you've studied other communities which are exposed to toxic substances?
A Yes.
Q Have you ever done a study at a community that was not exposed to PAHs or dioxins?
A Yes. At least -- everybody gets exposed and we have a background exposure, but we call their level of exposure background.
Q PAHs are ubiquitous in the environment?
A Yes.
Q And Dr. Schecter proved that dioxins are ubiquitous?
A Yes, that's correct.
Q He's done a lot of work in proving that dioxins an ubiquitous in the food supply; right?
A Yes.
Q So leaving the ubiquitous background exposures aside, I want to talk about some community that you've done research on that didn't have these high levels of dioxins and PAH exposures.
Have you ever in one of those studies found an increased incidence of asthma or breathing problems?
A Well, if you're talking about our control groups where we tried our best to find a community that's relatively clean --

Q I'm talking about your exposed population.
A I'm trying to remember here. We looked at those people next to the aluminum recycling plant -- I don't recall that we had an excess of asthma in that group. We had some other upper respiratory effects and I don't recall asthma being in excess in that group.
Q Any others?
A Let's see. Most of the other groups we looked at have had PAH as part of the mix and petroleum-based environment. I think in homes in Mexico, I don't think we found an increased rate of asthma amongst the kids.
Q New Mexico or Mexico?
A New Mexico. And, of course, in the control groups we have found them not to be in excess, but the respiratory tract tends to be a major target organ for most environmental pollutants because the lung is bathe in it and it's the size of a football field, a large surface area, exposed to the environment, and it's the shock organ that takes the bulk of the exposure, and if there's any tendency at all to damage the respiratory tract, that's going to be impacted. It's common to see the respiratory tract as being the major -- one of the major areas impacted.
Q And I know this is a memory test and probably not fair but, as you sit here now, can you think of a

population you've studied that didn't have increased PAH and dioxin exposures as an issue, where you found increased instances of respiratory tract problems or asthma?
A Yes, the exposure to the catacarb release in San Francisco, there was an increase of asthma.
Q What's catacarb?
A A chemical used in refineries to break down crude oil into gasoline and other components and catalytic material.
Q Any other instances that you can think of?
A Release of SO2 from the Conoco refinery in Lake Charles resulted in very high instances of child asthma.
Q What chemical was released?
A S02, sulphur dioxide.
Q Any other instances you can think of?
A I just don't recall at this time.
Q You did work in the Redlands case?
A Yes.
Q Was that ground water exposure?
A Yes.
Q Was asthma an issue in the Redlands case?
A Yes, there were increases in asthma prevalence but not very much, but it was consistent with reported TCE in ground water from the ATSDR studies that showed

increased asthma and respiratory symptoms.
Q So ingestion of contaminated ground water can cause asthma?
A The primary root of exposure is inhalation. But also bathing, showering and cooking and filling the home with TCE.
Q Inhalation of TCE can cause asthma?
A Yes. And in that case there was also prochlorate that was present in the water that may have contributed to the respiratory problems, but what's reported in the literature is respiratory problems from TCE.
Q Any other correlated problems --
A There were reported to be some but not documented.
Q So it's TCE and prochlorate?
A Those were the measured ones. There were a lot of chemicals probably present based on the usage in the site but not measured in the water.
Q Any other cases you remember where you detected or formed the opinion there was an increased incidence of asthma or breathing difficulty and not an increased level of PAHs or dioxins?
A I don't recall at this time any others.
Q We talked a moment ago about the diseases that

have causes but sometimes you don't know what are --
A Yes, I think everything has a cause.
Q Do you believe that every disease that this population or any other population you studied, their experiences has been caused by an environmental exposure that you're studying?
A No, there is a lot of diseases not caused by exposures.
Q So people can be exposed to a toxic substance and develop diseases for reasons completely unrelated to that exposure; is that right?
A Yes, absolutely.
Q And people can have exposure to a toxic substance and give birth to a child with a birth defect for reasons completely unrelated to that exposure?
A That's certainly possible.
Q Out of curiosity, have any of the advances that scientists have made in the human geno project made us closer to diagnosing what causes birth defects?
A The short answer to that is we're no closer to understanding how these birth defects get induced. But we now know a lot more about the relationship between various toxic exposures and changes that occur in the DNA or the geno, and those changes and abnormalities, once they're figured out, a pattern might emerge and allow us

to understand what the defects are and give us a chance of maybe reversing some of them.

But there's also a very major possible development in the future of being able to actually fingerprint what people have been exposed to more specifically because of the defects that occur in the DNA.

But right now most of the data, for example, the cadmium or chromium or some of the metals there's attempts to see what changes occur in geno in the cells exposed to these specific toxicants. A number of abnormalities has been very large, and the patterns have not always been consistent and so we have a lot more to learn before we can use it as a marker of exposure or effect.

Q What you're talking about is in vitro studies of DNA adducts or DNA problems --
A Not DNA adducts. We're talking about the actual sequencing of DNA and looking at specific parts of the geno using these PCR amplification techniques where you go in and sequence the gene and see where the sequence becomes disruptive.
Q So work has been done to determine how specific toxins interrupt the gene sequence?
A Yes.

Q Has any of that work been done with substances other than metals?
A I don't recall off the top of my head.
Q Are you aware of any signs that look at interruptions in the gene sequence from PAHs and dioxins?
A It may have been done and I have not specifically looked at that. There is whole new field of toxicogenomics, they call it, and there's a lot of work done in that area and would not be surprised if PAHs have been looked at, but at this moment I have not looked.
Q Let's go back to Jarvis. We took off on a tangent. We were talking about Jarvis' asthma and the extent to which emissions from the plant, as opposed to secondhand cigarette smoke or some unknown other cause led to his asthma.

Are you prepared to say with any degree of quantification to what extent the emissions from the Koppers plant caused Jarvis' asthma?
A As I said, it's the predominant cause and made a long explanation why I thought the secondhand smoke was a minor contributor, although I believe it probably contributed.
Q Other than the predominant cause, can you give me any more quantification than that?
A No.

Q Sense of smell. Was one of the other issues that you identified -- and I can't remember the word you used -- decreased sense of smell?
A Hyposmia.
Q Is that a separate condition from his other respiratory problems?
A No. It's part of the respiratory tract injury.
Q And if I were to ask you questions about hyposmia, would your answers be the same as what you told me about asthma?
A Yes.
Q You did mention Jarvis has skin conditions?
A Yes.
Q And did they reach a level of clinical significance?
A Yes.
Q To what extent did Jarvis' exposure to emissions from the Koppers plant cause or contribute to his skin conditions? This is the same quantification question.
A I didn't identify any other cause for having the skin rash. It could have been by some type of unknown cause but the only known cause is the exposure to the pollutants of the Koppers plant.
Q Your opinion, to a reasonable degree of medical

certainty, is that the sole cause of Jarvis' skin problems is the contact with the emissions from the Koppers plant?
A As far as I know, that's correct.
Q Let's go to Leroy McNeal.
(Defendants' Exhibit 32 and 33 was marked for identification by the court reporter.)
BY MR. HOPP:
Q I've handed you what we've marked deposition Exhibit 32 and 33. You have those in front of you?
A Yes.
Q Deposition Exhibit 32 is the summary for Leroy McNeal?
A Yes.
Q Is Exhibit 32 a statement of your opinions with respect to Leroy McNeal?
A Yes.
Q Does deposition Exhibit 32 contain all of your opinions with respect to Leroy McNeal?
A Yes.
Q And deposition Exhibit 33 is the questionnaire regarding Leroy McNeal?
A Yes.
Q Filled out by his wife Willie McNeal; is that right?

A That's correct.
Q Leroy McNeal died in 1998?
A Yes.
Q And his wife filled out the questionnaire almost six years later in 2004?
A That's correct.
Q Now, you state in your summary that Leroy McNeal died on December 19, 1998 of lung, stomach and colon cancer; is that correct?
A Yes. That is my understanding, although I think that's what the history was from the wife.
Q Is there a primary cancer or secondary or more than one primary cancer?
A The certificate of death says lung cancer. The wife said not only lung, stomach and colon but he also had prostate cancer. I think there is some more information we can put together here on Leroy.
The wife only met him in 1988 but she -- stomach cancer was documented by Dr. Wolfson's review of the records -- he had some records which I didn't have. In 1997 he was diagnosed with metastatic stomach cancer, poorly differentiated signa ring cell adenocarcinoma and treatment was unsuccessful. Now, I think the other locations that the wife talked about might have been metastatic lesions, rather than additional primaries.

Q It's rare for someone to have three different primary cancers; correct?
A Yes.
Q And that's what supports your assumption or your supposition that he had a single primary cancer in the stomach and it metastasized to other organs; right?
A I think that's what happened here. He may have had prostate cancer also but that is not -- we don't have the records about that.
Q Prostate cancer, so we're clear, is a very common condition in men of a certain age?
A Yes. It's common particularly in older men. Men in their 50's, which he would have been in 1995, it's less common and certainly not universal, but it is usually -- many cases of prostate cancer do not result in death, and they are not aggressive and that may have been the case here where he had a prostate cancer that was not aggressive.
Q But the major problem we have with him is stomach cancer?
A Yes, that's clearly was caused his death.
Q What are the known risk factors for stomach cancer?
A Known risk factors?
Q Documented known risk factors?

A Well, stomach cancer was common in Japan many, many years and the incidence decreased in recent years, and one of the theories was that they used to dust the rice with talcum powder contaminated with asbestos. Dr. Selikoff also showed that people with asbestos exposure have increased rate of GI cancer, including stomach, and asbestos is probably a cause.
I think it's more common in people who are heavy alcoholics or have heavy alcohol ingestion. I don't recall any other -- I think cigarette smoking has an increased rate of stomach cancer, as well, but smoking and drinking tend to go together because most people who are heavy drinkers are heavy smokers and those may be co-factors.
Q Any other known risk factors that you're aware of for stomach cancer?
A There is certain genetic conditions that predispose people to stomach cancer.
Q Like what?
A I can't remember right now, and it's a genetic disease and doesn't apply here.
Q Does race have an effect on stomach cancer cases?
A It's more common in Japan. I'm not -- I think there is -- I don't know if the incidence of stomach

cancer is different in blacks and whites in the U.S. The mortality rate in higher in blacks, but that's felt to be due to less access to medical care.

I don't recall what the figures are with stomach cancer in particular in race.

Q Is diet or any type of diet, other than rice in Japan, been tied to stomach cancer?

A Colon cancer is related to fat in the diet and the higher the fat content and higher the colon cancer. I don't recall if it applies to stomach cancer. There may be some dietary factors. I think studies many years ago suggested that hot tea was associated with increased gastric cancer rates.

Q Were those black tea studies done by Mclaughlin and others?

A I believe that's what they were talking about.

Q Do PAHs cause stomach cancer?

A I believe so.

Q Is a diet heavy in PAHs increase the risk for stomach cancer?

A Probably, yes.

Q So the higher consumption of grilled foods and barbecued foods might increase the risk for stomach cancer?

A I believe that has been shown.

Q What about TCE, is that a risk factor for stomach cancer?

A I don't recall.

Q Mrs. Willie McNeal reported that Mr. McNeal lived on Carver Circle most of his life; is that correct?

A Yes, that is what she said.

Q And you've indicated earlier that she only knew him for the last ten years or so of his life?

A Right; but she was reporting what he said to her.

Q Now, what goes on at the Heat Craft plant?

A They make some metal parts -- I forget what it is, the particular parts, but some kind of metal objects.

Q You indicated in your summary here that at Heat Craft they use degreasing solvents, including trichloroethylene and 111 trichloroethane?

A That's what it says.

Q So you've been involved in other litigation involving trichloroethylene and other chlorinated solvents?

A Yes.

Q Have you formed an opinion as to what health conditions can be caused by exposure to them?

A Yes.

Q In this case do you have an opinion as to

whether Mr. McNeal's exposure to trichloroethylene or trichloroethane caused or contributed to his stomach cancer?

A Well, in terms of the stomach cancer issue, per se, I told you that I don't recall if there is a link or not. I have opined that trichloroethylene has increased the risk of several other types of cancer in other cases and I believe that to be true. In fact, trichloroethylene is well studied in a lot of data on its ability to increase the risk of cancer in certain issues.

Q And is trichloroethylene a known human carcinogen?

A No. It's currently classified as a 2A, a probable human carcinogen.

Q Is 111 trichloroethane a known human carcinogen?

A No. It's currently classified, as I recall, as a 3, which is not enough information about its cancer-causing capacity to make comments at this time.

Q But it's your opinion that trichloroethylene at a certain dose can cause cancer?

A Yes.

Q Which commonly is abbreviated TCE?

A That's correct.

Q And is it your belief that TCE can cause answer

in more than one body system?

A Yes.

Q We talked yesterday about the notion that if something is a carcinogen it can cause cancer in any organ system it contacts; right?

A Yes. It increases the risk in those organs.

Q And you believe the same holds true for TCE?

A Yes.

Q Where is Heat Craft plant in relation to the Carver Circle neighborhood?

A Down the road and probably a mile away, something in that range.

Q Downwind?

A Does the wind blow from Heat Craft to the neighborhood?

Q Correct.

A I believe it does. At least it blows sometimes in the direction, not always.

Q Are you aware of any monitoring that you're aware of in the Carver Circle neighborhood for chlorinated solvents in the air?

A There may have been. I have not seen any data but someone said, I think, there have been measurements. I know that Dr. Sharma did some extensive investigation of the Heat Craft plant and looked at their toxic release

inventory, and that's the amount of material they reported discharging into the air or --

Q Sometimes called form R's?

A I just know it as TIR reports. That the amount of material they discharged into the air would have been very, very small. There was some discharge but it was in very small ranges, and that was his communication to me. They thought it was a diminimus issue in terms of the air contamination from the plant.

Q Toxic release inventories are self-reports that a company puts together?

A Yes.

Q And does Dr. Sharma or anyone else that you know of intend to do a mass balance of TCE used at Heat Craft compared to the form R?

A I don't know if they've done any modeling or attempting to do mass balance equations or any other information about what was present. What I remember him communicating was that the TIR values were low.

Q TCE is a solvent that evaporates at ambient temperatures; is that right?

A It reaches into the air and evaporates.

Q And that's why in a vapor degreaser they heat the solvent a bit and have to cool it at the top of the unit so it falls out of solution; right?

A Yes. It's called a vapor recovery system and that's the way it works. It's a very effective system and it's replenished because they're recovering it all the time. So they create a vapor over the liquid and put the parts in there and the parts get cleaned and they recover the vapor and recycle it.

Q And any TCE that's left on the part after it comes out of the vapor degreaser, that's evaporated; is that right?

A That's correct.

Q And that's part of the advantage of using TCE and it doesn't leave a residue and not wet on the surface of the part; is that right?

A Yes, it's going to evaporate from the part.

Q Mr. McNeal also smokes cigarettes; is that correct?

A Yes.

Q He had a 25-year smoking history, at least according to his wife?

A Yes. A half a pack a day.

Q 12 and a half pack years?

A That's correct.

Q She also reported that he drank alcohol; is that right?

A Yes, two drinks a week.

Q Do you believe that's accurately reported or under-reported?

A Well, I have not seen data on what wives under-report. I would think they tend to be more accurate than a person reporting on themselves. Two drinks a week is a pretty low level of indigestion.

Q Do you believe that TCE and cigarette smoke can have synergistic effects?

A Whether synergistic or not, I don't think there's any data at this point but it could be added.

Q Now, looking on page 2 of 7 for Mr. McNeal, we have the question of "Have you ever been told by a doctor you have any of the following," and Mrs. McNeal answered yes for abnormal heart rhythm, kidney disease and rhinitis, which is a runny nose?

A That's right.

Q Have the abnormal heart rhythm or kidney disease been confirmed with medical records to your knowledge?

A I have limited medical records, and Dr. Wolfson had some more, and I didn't see in his review that those kidney or heart problems were mentioned, nor was there any confirmation in the medical records about his rhinitis either, but I'm sure there is medical records we just didn't have.

Q Following that, there is a series of yes or no questions that Mrs. McNeal answered for her husband, to go on to the bottom of page 7, and she was asked about various symptoms and the questions are yes or no.

So you see that?

A Yes.

Q Towards the end of his life, Mr. McNeal must have been fairly sick; is that fair?

A That's a fair assumption.

Q Do you know whether any of these symptoms that his wife reports occurred towards the end of his life or earlier in his life?

A No. Actually, we don't have the information about that.

Q Looking at page 3 of 7, Mrs. McNeal was asked how many times a year do you have colds or flu, and for her husband she said 344 days a year.

Do you see that?

A That's a mistake. She really said 3 to 4 and the computer saw 3 or 4 -- they saw the "or" as a number.

Q So it's 3 or 4 times a year?

A Yes.

Q That's normal?

A Probably you can call that within the range of normal.

Q Looking on page 4 of 7, the question is, "Have you ever been told by a doctor that you have," and for cancer she says yes, and she mentioned Hodgkin's disease? Do you see that?
A Yes.
Q And is there any confirmation in the medical records he had Hodgkin's disease?
A No. I think that was just -- I don't know where that came from. She wrote it down on her questionnaire, but someone may have told her that he had it and was trying to write it down by being thorough, but there's no indication in the medical records that that's the case.
Q Again, looking at the 1 to 11 scale, the various symptoms that Mrs. McNeal reports her husband had, she gives a couple of them 11 -- shortness of breath, nausea, dizziness, extreme fatigue, someone who has all the symptoms all the time.
That characterizes someone as very sick; is that right?
A Yes. I think that was reflecting his symptoms close to the end of his life.
Q Looking at your summary, the last page of your report for Mr. Leroy McNeal, you mentioned -- let's talk about his stomach cancer, which is the major issue with

him --
A Okay.
Q Do you believe his exposure to emissions from the Koppers plant caused or contributed to his stomach cancer?
A Yes.
Q Is it your understanding that cigarette smoking and his work at Heat Craft contributed to his stomach cancer?
A Yes.
Q Do you believe that exposure to emissions from the Koppers plant was the major cause of his stomach cancer?
A Yes. I think again that here is person from what we know lived most of his life next to the plant on Carver Circle, and I was just going to look here at Dr. Sawyer's dose calculations, and he had a significant dose based on this little device, but I also want to look --
Q While looking, the dose calculations that Dr. Sawyer made were based on environmental sampling 6 years after he died; right?
A He did retrospective calculations based on data collected 6 years after his death. He died in 1998 and --
Q The data was collected in 2004.

A Yes. It was some years after.
Q And he back-modeled and tried to figure out what the dose was?
A He was assuming, I think, certain things about -- let me go through here -- Willie McNeal provided information to Dr. Sawyer and he obtained the information that he attended Duck Hill Elementary school prior to age 16. He did not attend high school. Prior to age 20 Mr. McNeal did not live within the Tie Plant area and began to reside there between the ages of 20 and 38 -- '71 to '89, immediately adjacent to the plant property, and he worked at the tie plant.
Q For years?
A She was uncertain as to what functions he performed. She met him originally in his teens but then started dating and marrying and then met and started dating in '88 and then eventually got married.
He goes on to collect information about the exposure at the plant. She stated she was unaware of any excessive alcohol consumption, but there was a question raised in the medical records by Dr. Wolfson about him being a heavy drinker in the past.
Q She was not there --
A When she was not around him, he could have been drinking heavily. Again, a history of a half pack of

smoking and the medical record reviewed by Dr. Wolfson indicate heavier smoking in the past. So he then lived next to the Tie community '71 to '80 on Blue Goose Road and '80 to '89 on Tie Plant Road, and both of these are within the area.
He then makes an estimate of the community average house dust dioxins, TEQs, which I believe are on the low side of 1949 picograms per gram and then goes on to give a dose of the CTPV levels, which he found to be very high compared to the ambient air guidelines and notes a very high level of contamination from PAHs, 90 times in excess of the U.S. EPA guidelines. So he goes on and states that the patient's cancer was definitely caused and contributed to by the exposure.
So given his exposure history, we don't have any quantification of the exposure history from the trichloroethylene exposure he might have had while working at Heat Craft, and all we know is he supposedly worked there many years, and she worked there also.
She described that like she, he was exposed to some trichloroethylene but there's no quantification and doesn't say he was a degreasing operator and not necessarily over the degreasing tank all day. So it's hard to quantify those exposures based on available data, and all we can say is he probably had some TCE exposure

working at that plant.
So clearly the one documented and an extremely important exposure that we can semi-quantify is the exposures to the Koppers emissions, and they're very high and the predominant cause of his cancer, even though the smoking and drinking and the trichloroethylene probably contributed to his risk.
He contracted the disease at a relatively young age, as discussed yesterday, and the cancer risk from age begins to kick in after age 60, and, when you start seeing cancers in younger age groups -- he died at 57 and diagnosed at 55 -- I believe that was -- no. There is some discrepancy here when the diagnosis was made. The medical records suggest 1997. She thought he might have been diagnosed earlier than that. Let's go with 1997 and he was 56, I guess, when he was diagnosed with stomach cancer. If any of the other cancers were documented, they would have occurred earlier based on her history. Point being that occurring at a younger age is also indicative of a heavy exposure to carcinogenic agents.
For example, patients with asbestos exposure their peak of cancer is age 45 to 55, the same time frame, and that's because of the potent carcinogenic effect of asbestos and this man fits into the same category of potent carcinogenic exposure and documented

by Dr. Sawyer.
Q There are PAHs in cigarette smoke?
A Yes.
Q Carcinogenic PAHs?
A Yes. It's estimated to be about one micogram of benzopyrene equivalents in each cigarette. Cigarettes are definitely a risk factor for developing cancer.
Q Benzopyrene is a known human carcinogen; correct?
A Yes.
Q And Mr. McNeal sucked benzopyrene directly into his lungs when he smoked a cigarette.
A That's correct.
Q And he worked with TCE and he has an unknown history with respect to drinking and diet, and yet it's your opinion that the house dust caused the cancer?
A Well, I think house dust was one of the factors and we also identified there was particulate exposure and vapor exposure to PAHs.
And, again, back to the issue of cigarettes and the PAHs in them, it's true that you get a significant dose from that, but he had additional exposure to PAHs from the plant exposures, which were quantifying based on the available evidence.
But he had an additional exposure from the

plant through the dioxins, which, as I said yesterday, are the most potent carcinogenic agents on a weight basis that we know about.
Clearly those things are strong factors in the cancer risk, and smoking is a cancer risk and alcohol appears to be a promoter and increases risk also. There's no question he had other factors that contributed.
But, I mean, we have to look at this in terms of the studies that have been done on my studies and studies by McGee showing a very high risk of cancer in the communities around these plants, and we're comparing them to people who smoke and drink and have other risk factors, but there is a potent factor from just living next to these plants.
The Grenada levels, by the way, for the dust levels in homes are higher than they were in Columbus and I suspected we'll find more diseases as we go forward.
Q You're familiar with the studies on the Seveso cohort in Italy? S-e-v-e-s-o.
A Yes.
Q What's the rate of lung cancer among people 20 years out in Seveso cohort?
A I don't recall that figure from memory.
Q Seveso, so we're clear, is a town in Italy

where in 1976 a pesticide plant had an explosion or release?
A Yes.
Q And it was unique because it's a well-documented exposure to dioxins; is that right?
A Yes. A one single explosion that contaminated the whole neighborhood, and they put a big fence around the plant immediately and the surrounding areas and followed the population that lived in the village next door.
Q It followed several villages on a regular basis for the past 30 years almost?
A I don't see that that's comparable to our situation. Our situation is pumping dioxins into the air and soil and water on a daily basis and it wasn't one explosion.
I mean, you know, there is no questions there is valuable data but it's not comparable. The dose those people sustained was an acute high level exposure with some ongoing exposure that's not well characterized. They measured a small number of people's blood levels and documented that they've come down steadily as years have gone by.
Q You testified earlier that dioxins persisted in the environment and the human body; correct?

A Yes. But I'm telling you this explosion took place, these people were followed and the levels came down. And what I'm saying is they had an acute exposure and now they probably had background exposure, as well, but their levels have fallen, and it's a different kind of situation than we have in Grenada.

Q I have plenty more questions about Seveso, but let's go back to Mr. McNeal.

MR. LUNDY: Before you go on the break, this is the stuff Randy Horsak was following up on, and what he did recently and, since Mr. Collins is here I want to put him on notice, like I put Jill Blundon on notice that these documents and levels and especially OCDD, which is fingerprinted to penta, all of them exceed cleanup levels in Mississippi, and I put her on notice of this 60 days ago, and nobody's reported anything to the regulatory agencies or made any effort to clean up, so I'm making a note of it for the record. Alice Hill has 7 million parts per trillion of OCDD in the house and these other ones are just astronomical.

MR. HOPP: For my benefit -- and then we'll take a break -- is this data we've seen before?

MR. LUNDY: No. I just got it. But I'm giving it to you if you want to fax it to whoever is doing Randy's deposition on Friday, and they will have.

(Recess.)

MR. HOPP: A couple of things, now that we're back on the record. I do want to register an objection to the late production of the data you recently gave us 25 minutes ago and point out that plaintiff's disclosure deadline was March 1. But I'll register my objection.

MR. LUNDY: That's fine. We've got ongoing cases and we've got the Ellis cases and state court cases and we're doing our work, and I'm putting the company on notice.

I put Jill Blundon and your office was there on behalf of Beazer and Koppers, and she was there on behalf of Beazer only, and Mr. Collins is here on behalf of Koppers, as I understand, and those two companies are aware of what's in the houses next to their plant.

She told me that day that she was not aware of it and I put them on notice and handed her the data, just like I'm not handing all the data, and you have the other data that reflects the exposures in the house and concentrations in the house, and this was some that had just come in and I'm going to be handing it to you all. So whether it's used at trial or not, I understand that will be a point to argue, but I put you on notice of it.

This witness testified, and I've seen Dr. Sawyer's report, and it mentioned the fact that there is

conceivable irreparable harm if they continue to live in this environment, and my position is to either clean it up or condemn the houses, and I'm making that position for the record.

MR. HOPP: I understand your position and you understand my notice issue and just so we're clear

Q Dr. Dahlgren, going back to Leroy McNeal, you indicated in your prior testimony that exposures or releases from the Koppers plant was a major contributing factor for Mr. McNeal's stomach cancer; is that correct?

A Yes.

Q Other than saying a major factor, is there any greater degree of specificity or quantification you can give me?

A No.

MR. LUNDY: For the record, this is a belated objection. I think you used the word predominant at one point and the word significant, so if those two are synonymous with major, then he testified to those.

MR. HOPP: Now he's got me distracted.

Q Doctor, we used various qualitative terms to describe your opinions with respect to the extent to which PAHs contributed to Mr. McNeal's stomach cancer. Those terms have included major, predominant and significant; is that fair?

A That's fair.

Q Do you distinguish between major, predominant and significant for purposes of your opinion with respect to the PAHs and Mr. McNeal's stomach cancer?

A They are all intended to convey the fact that I think it is the most important factor of all the factors we looked at, being the predominant factor, the most important factor. It's, you know, a major or significant contributing factor and I think those all convey the same idea.

Q And that idea is a qualitative one, as opposed to a quantitative one; correct?

A That's correct.

(Defendants' Exhibit 34 and 35 was marked for identification by the court reporter.)

BY MR. HOPP:

Q I've handed you deposition Exhibit 34 and 35. Is deposition Exhibit 34 your summary of your opinions for Sherrie Barnes?

A Yes.

Q And does deposition Exhibit 34 contain all of your opinions with respect to Sherrie Barnes?

A Yes.

Q And Exhibit 35 is a questionnaire filled out by Kenesha Barnes?